

1,4,8,11-tetraazacyclotetradecane, 2,2'-bipyridyl, 2,2'-bi(4-*t*-butyl)pyridyl and 2,2',2''-terpyridyl.

4. A process according to claim 1 wherein the molar ratio between the transition metal or transition metal salt in its lower oxidation state and the halogen or -SCN containing compound is from 1:1 to 1:3.

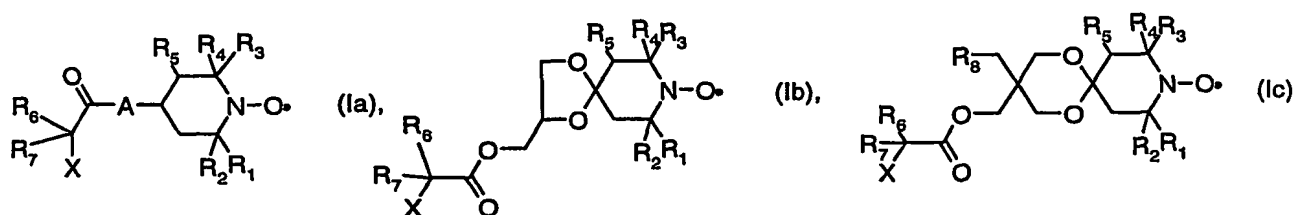
5. A process according to claim 1 wherein the transition metal is selected from the group consisting of Cu, Fe, Mn, Mo, Cr, Ni and Ru and the transition metal salt in its lower oxidation state is a halogenide, sulfate, nitrate, carboxylate or trifluormethane sulfonate of these metals.

6. A process according to claim 1 wherein the molar ratio between the ligand and the transition metal or transition metal salt in its lower oxidation state is from 0.5:1 to 1:5.

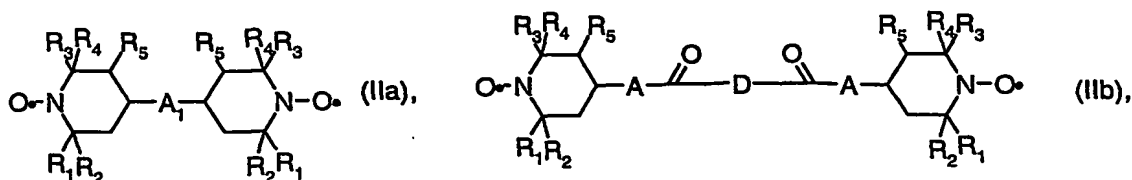
7. A process according to claim 1 wherein the polymerization temperature is from -20°C to 100°C.

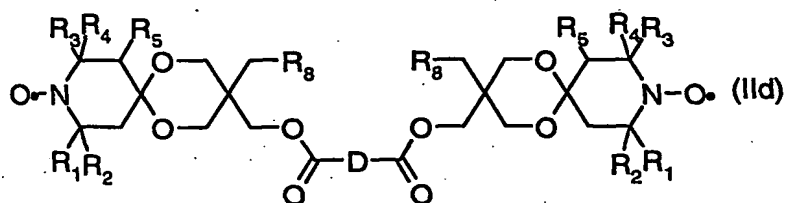
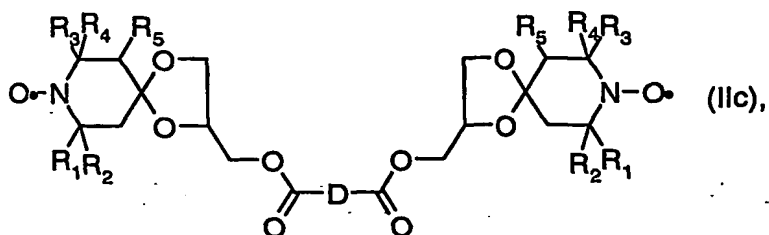
8. A process according to claim 1 wherein

a) the mono nitroxide of formula (A) is of formula (Ia), (Ib) or (Ic)

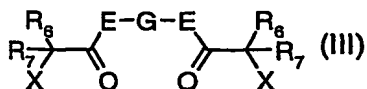


b) the dinitroxide of formula (B) is of formula (IIa), (IIb), (IIc) or (IId)

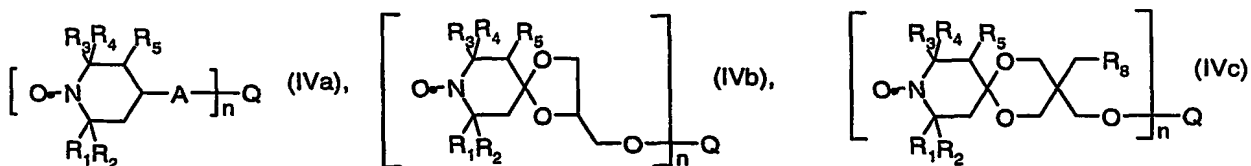




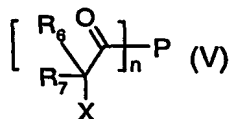
the compound of formula (C) is of formula (III)



c) the polynitroxide of formula D is of formula (IVa), (IVb) or (IVc)



the compound of formula (E) is of formula (V)



wherein in the formulas

R_1 , R_2 , R_3 and R_4 are methyl or ethyl; or

R_1 and R_2 and/or R_3 and R_4 together with the carbon atom to which they are bonded form a C_5 - C_8 cycloalkylring;

R_5 is H or methyl;

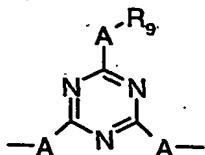
R_6 and R_7 are H, C_1 - C_8 -alkyl or aryl;

R_9 is H or methyl;

X is halogen or $-\text{SCN}$;

A is O or NR_9 wherein R_9 is H or $\text{C}_1\text{-C}_{18}$ alkyl, $\text{C}_5\text{-C}_{12}$ cycloalkyl or aryl;

A_1 is a group $-\text{NR}_9\text{-(CH}_2\text{)}_a\text{-NR}_9\text{-}$ wherein a is a number from 2 to 12 or a group



D is a direct bond or $\text{C}_1\text{-C}_{12}$ alkylene, $\text{C}_5\text{-C}_{12}$ cycloalkylene or arylene, wherein the alkylene and cycloalkylene may be interrupted by one or more O, S or N atoms;

E is a direct bond, O or NR_9 ;

G is $\text{C}_1\text{-C}_{12}$ alkylene, $\text{C}_5\text{-C}_{12}$ cycloalkylene or arylene wherein the alkylene and cycloalkylene may be interrupted by one or more O, S or N atoms;

n is 3 or 4;

Q is the acyl residue of a trivalent or tetravalent carboxylic acid;

P is the residue of a trivalent or tetravalent alcohol.

9. A process according to claim 8 wherein the compound is of formula (Ia), (Ib) or (Ic).

10. A process according to claim 9 wherein the compound is of formula (Ia), (Ib) or (Ic);

R_1 , R_2 , R_3 and R_4 are methyl;

R_5 is H;

R_6 and R_7 are independently H or methyl;

R_8 is H or methyl;

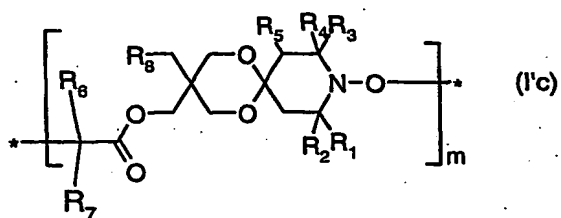
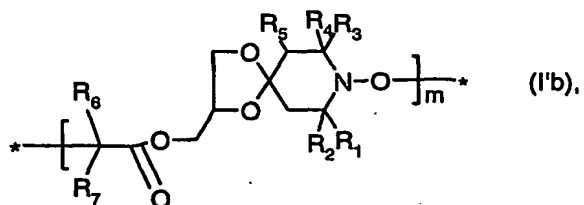
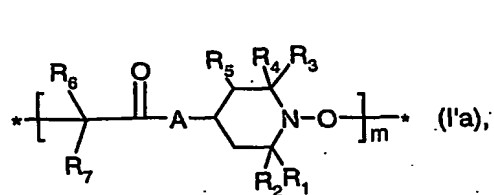
X is Cl or Br;

A is O or NR_9 and R_9 is H or $\text{C}_1\text{-C}_{18}$ alkyl.

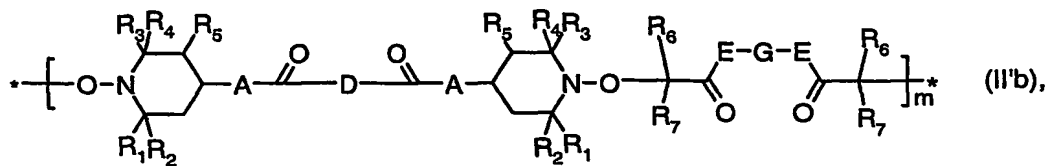
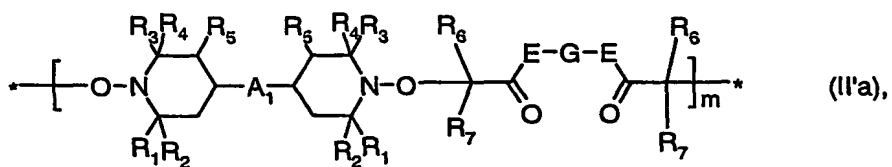
11. A process according to claim 10 wherein the compound is of formula (Ia).

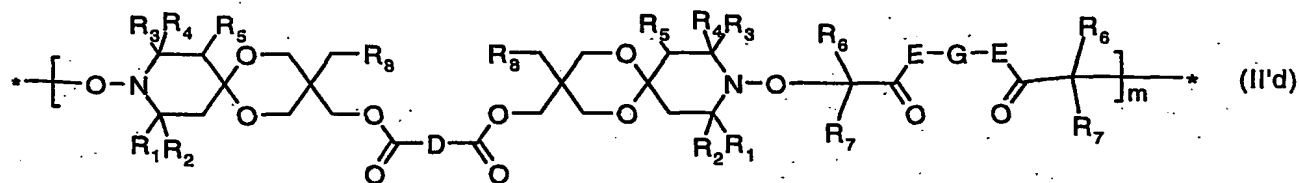
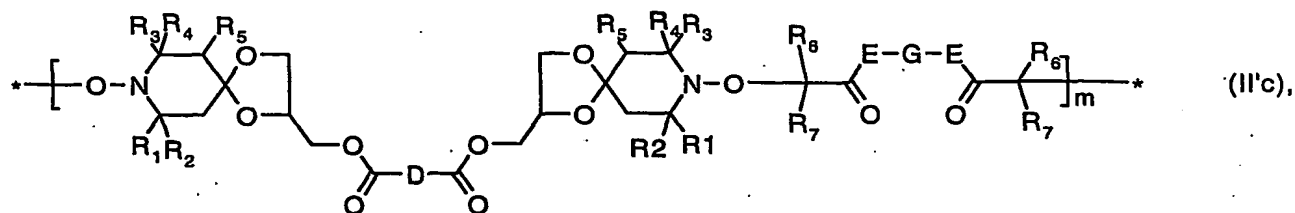
12. A polymer obtainable by a process according to claim 1

13. A polymer with a repetitive structural element of formula (I'a), (I'b), (I'c)



(II'a), (II'b), (II'c) or (II'd)





wherein in the formulas

m is a number from 1 to 5000

R₁, R₂, R₃ and R₄ are methyl or ethyl; or

R₁ and R₂ and/or R₃ and R₄ together with the carbon atom to which they are bonded form a C₅-C₈cycloalkyl ring;

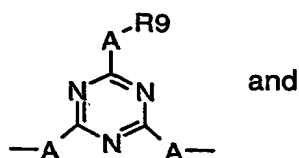
R₅ is H or methyl;

R₆ and R₇ are H, C₁-C₈-alkyl or aryl;

R₈ is H or methyl;

A is O or NR₉ wherein R₉ is H or C₁-C₁₈alkyl, C₅-C₁₂cycloalkyl or aryl;

A₁ is a group -NR₉-(CH₂)_a-NR₉- wherein a is a number from 2 to 12 or a group

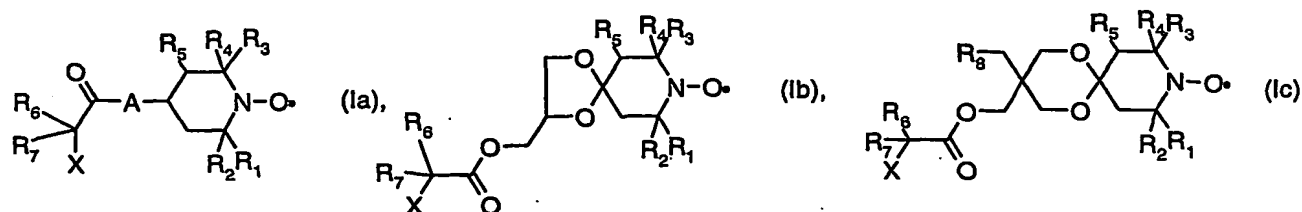


D is a direct bond or C₁-C₁₂alkylene, C₅-C₁₂cycloalkylene or arylene, wherein the alkylene and cycloalkylene may be interrupted by one or more O, S or N atoms;

E is a direct bond, O or NR₉; and

G is C₁-C₁₂alkylene, C₅-C₁₂cycloalkylene or arylene wherein the alkylene and cycloalkylene may be interrupted by one or more O, S or N atoms.

14. A compound of formulae (Ia), (Ib) or (Ic)



wherein in the formulas

R₁, R₂, R₃ and R₄ are methyl or ethyl; or

R₁ and R₂ and/or R₃ and R₄ together with the carbon atom to which they are bonded form a C₅-C₈cycloalkylring;

R₅ is H or methyl;

R₆ and R₇ are H, C₁-C₈-alkyl or aryl;

R₈ is H or methyl;

X is halogen or -SCN;

A is O or NR₉ wherein R₉ is H or C₁-C₁₈alkyl, C₅-C₁₂cycloalkyl or aryl.

15. A stabilized composition, which comprises

(a) an organic material subject to degradation by heat, light or oxygen, and

a compound obtained by a process according to claim 1.

16. A composition according to claim 15 wherein component (a) is a natural or synthetic polymer.

17. A composition according to claim 15 which additionally contains at least one coadditive stabilizer selected from the group consisting of the phenolic antioxidants, metal stearates, metal oxides, organophosphorus compounds, furanone antioxidants, hydroxylamines, UV absorbers, hindered amines stabilizer different from that obtained according to the process of claim 1 and mixtures thereof.

18. Use of a polymer obtainable by a process according to claim 1 as stabilizer for natural or synthetic polymers.

19. Use of a polymer obtainable by a process according to claim 1 as flame retardant additive in natural or synthetic polymers.

20. Use of a polymer obtainable by a process according to claim 1 as polymerization initiator/regulator in controlled radical polymerization reactions.